WHAT IS AGRICULTURE ENGINEERING?

By BOB CHANDLER

AGRICULTURAL Engineering is defined as: "The art and science of engineering in agriculture." The field and scope of this branch of engineering is probably least known to engineers on the campus. This may be due to the fact that Agricultural Engineering is a comparatively new curriculum in the Engineering College and only in recent years has grown to national importance.

A curriculum for Agricultural Engineering was instituted at the University in 1912 and directed by H. C. Ramsower. At that time courses in the subject were given in the Communications Laboratory; in the spring of 1925 the department moved to its present location, Ives Hall. Professor Ives directed administrative work from 1920 to 1924 and since that time Professor McCuen has continued administration of the department.

The requirements for admission to the five year professional curriculum are the same as the requirements for admission to the College of Engineering. Students are registered in the College of Agriculture for four years until a B. S. in Agriculture is earned and are registered in the Engineering College until the close of their fifth year when a B. S. of Agricultural Engineering degree is conferred by the Engineering College.

The first year courses are the same as are required for all other engineers. During the succeeding years the following courses and hours are required: Calculus, 10; physics, 15; mechanics, 13; economics, 11; English, 3; Industrial engineering, 3; Agricultural engineering, 53 to 68; Civil engr., 5; botany, 10; agronomy, 10; agriculture elect., 20; and engr. elect., 45.

Agricultural Engineering embraces a diversified field of agricultural and engineering work. The curriculum offered at the University enables the student to prepare himself for a profession of Agricultural Engineering in one or more of the four divisions which include: land maintenance and improvement, rural electrification, farm structures and farm power and machinery. Research work, college teaching, extension activities, or Agricultural Engineering process and applications in industry may be followed in the curriculum. Fundamental training in engineering practice in agriculture is offered for prospective farmers and engineering executors of land and farming projects.

The U.S. Department of Agriculture, Bureau of Agricultural Engineering was organized in 1926 and since that date many Agricultural Engineering graduates have entered the service of this bureau. Valuable engineering research in rural electrification and the farm power and machinery fields is accomplished by this unique bureau. Fewer losses in live stock and crops can be effected by new methods developed in research which include: use of electrical appliances, building construction principles, drainage and irrigation practices, and well planned use of power in machinery. From the results of research and practical application the Agricultural Engineer is able to analyze farm problems and advise every farmer on his own particular problems.

In addition to research, Agricultural Engineers have contributed vastly to the present Government projects of soil conservation, flood control, and farm improvement. These men are employed in directing the emergency C.C.C. work in hundreds of localities throughout the country. Other technicians serve as consulting engineers in the huge power dam projects as are now under construction at Muscle Shoals and Norris Dam, Tennessee.

The field of farm machinery design, manufacture, and sales requires many men with a thorough knowledge of agriculture and machinery principles. Radical changes in use of power have been effected since the introduction of cheap electric power in some parts of the nation. Many rural homes and farm structures have been modified to a great extent in construction to benefit by the use of electricity. Trained technicians in rural electrification practices make possible a larger scale farming with less labor expended for the average rural dweller. One of the latest developments by Agricultural Engineers in the field of electricity was a very practical type of a "one wire fence" charged with alternating current.

Power and machinery specialists are primarily interested in mechanizing the farm processes. Chief among the labor saving machines developed in recent years are: power driven combines, mowers, threshers, hay and silage loaders, seed planters, insecticide sprayers, and hammer mills for cutting feed. In addition electric milkers and milk coolers, feed driers, electrically heated brooder houses, and electrically heated soil beds for crops were developed.

Drainage and irrigation problems are continually confronting Agricultural Engineers in every part of the nation, due to drought and over use of land. Experiments with explosives in drainage work were conducted in Illinois. Another group of Agricultural Engineers in Utah contributed a method of digging irrigation ditches by an apparatus mounted on a truck. Such work constitutes the regular job of an Agricultural Engineer. He is continually required to develop low cost methods of farm operations particularly adapted to special localities in state, federal, and private industry.